REAL-TIME ENERGY DATA IN SUSTAINABLE PRODUCTION LINES

HIGHLIGHTS

- Automated, mechanized manufacturing plants have a great potential for implementing smart, real-time monitoring of renewable energy generation and consumption.

- To realize this potential, real-time data must continuously feed the distributed energy resources management system (DERMS) – necessitating reliable network connectivity.

- Our RUTX11 cellular router and TRB140 industrial gateway join forces in this solution to establish a system of connectivity that relays energy data from both inside and outside the manufacturing plant with efficiency and ease.

THE CHALLENGE – QUEST FOR SUSTAINABILITY

21st-century society is incredibly energy-hungry. In 2021 we consumed 176,431 terawatts per hour, which is 15.3% more than in 2010 and 43.7% more than in the year 2000. In addition, despite collective global efforts to shift to renewable energy sources, they remain a small percentage of our energy sources and grow at a slow pace. In 2010, 7% of the energy we consumed came from renewable sources. In 2010 it was 8.1%, and in 2021 – 12.6%.

As a global society, we need to pick up the pace. Every industry must become more sustainable by shifting to renewable energy and using it in a more efficient manner. In fact, some industries are well-suited for generating their energy.

Let's take industrial manufacturing for example. As the human workforce is gradually being phased out in favor of autonomous robots – which are far less prone to error and don't have earthly needs such as sleep or bathroom breaks – there is great potential for IoT connectivity to reshape this industry's energy consumption paradigm.

Imagine a near future where every manufacturing plant has solar panels installed on its roof (or whichever clean energy source is best-suited for its location). These can provide energy directly to the production line and a DERMS can monitor the energy usage in real time, ensuring its efficiency, and reducing overall costs.

The best part is that all of these technologies already exist and at progressively lower prices. The catch is that all parts must communicate with DERMS in real time for this solution to accomplish its goal, and the nature of the industrial environment means their Internet connection must be stable, reliable, and powerful. Which network connectivity devices are best fitting for the job?

TOPOLOGY
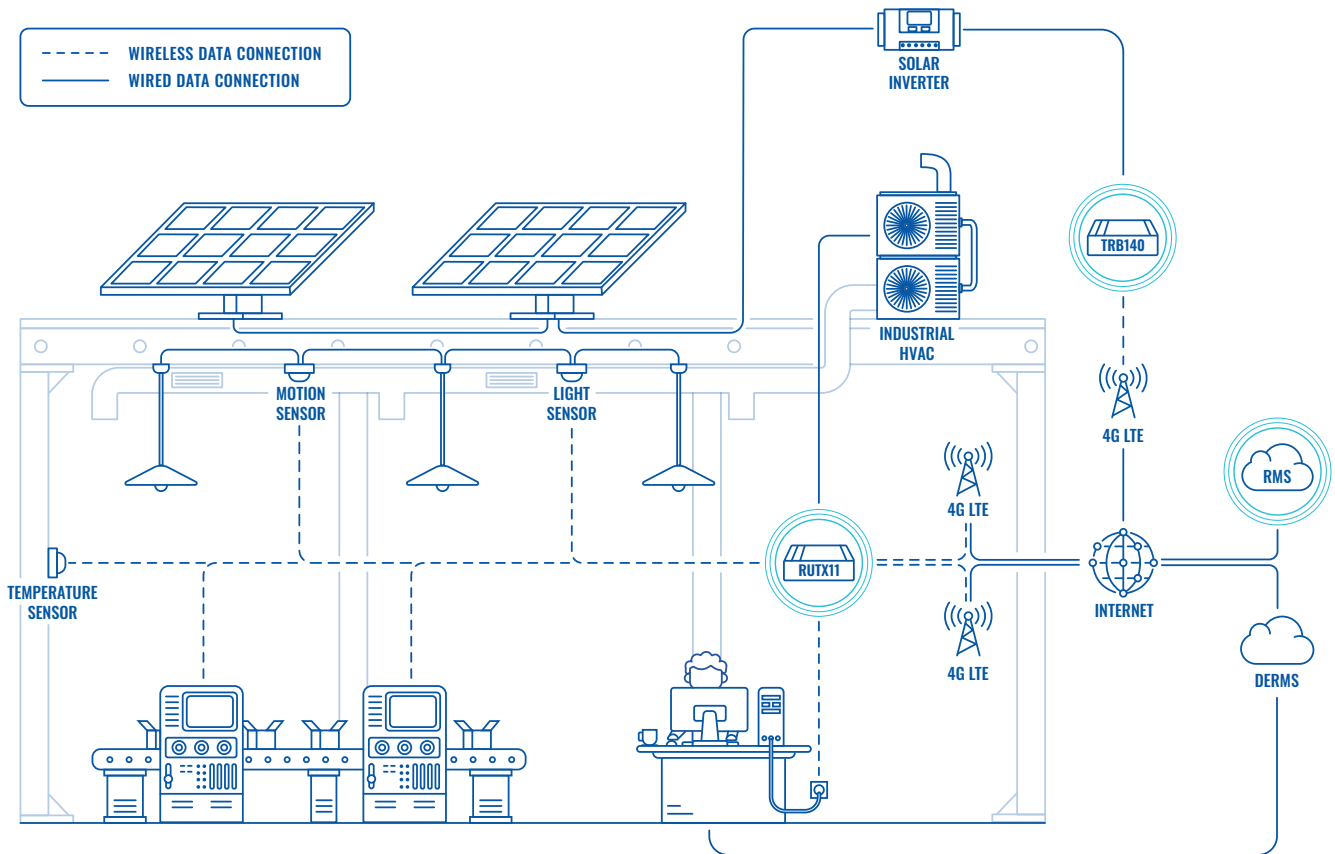
THE SOLUTION – MARCH OF THE MACHINES

From top to bottom, the solution begins with a solar inverter that converts the panels' DC electricity into AC. The inverter is connected both to the panels and to our TRB140 industrial gateway via Ethernet cables. This compact and energy-efficient gateway then wirelessly relays the data to the DERMS.

While that takes place on the roof, on the production line level we have the production lines wirelessly connected to our powerful RUTX11 cellular router. Also connected to that router are smart sensors installed on the ceiling, including a temperature sensor to help the HVAC unit maintain optimal temperatures, a light sensor to switch off the lights when available daylight is sufficient, and a motion sensor to detect any irregular activity that may disrupt production.

The data is then relayed to the DERMS, which can now maintain a comprehensive picture of the line's real-time performance and consumption behavior. RUTX11 then relays all that information to the DERMS, which now maintains a comprehensive, real-time picture of how energy is generated and used at the manufacturing plant.

Both RUTX11 and TRB140 are industrially-designed and are built with durability and easy installation in mind. TRB140 is perfect for maintaining a reliable 4G connection out in the open roof. Inside the building, RUTX11 packs quite the punch with an LTE Cat 6 Internet connection with dual SIM and auto failover for robust throughput at minimum interruptions. Both devices are compatible with our Remote Management System (RMS) for simplified remote access and maintenance.

It's time to reap the fruits of automated, mechanized production and step towards a greener, more sustainable future. With the help of IoT connectivity, doing so is increasingly easier and more efficient.